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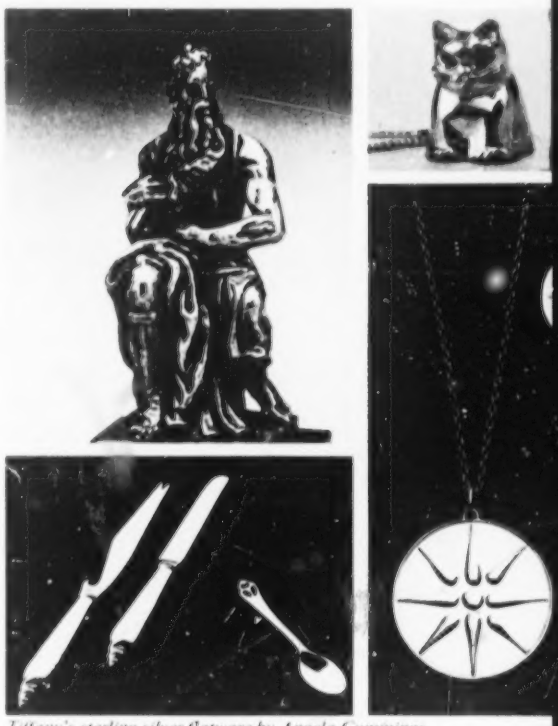
THE SILVER INSTITUTE LETTER

INFORMATION ON SILVER FOR INDUSTRY

VOLUME XI NUMBER II NOVEMBER 1981

VARIETY, STYLE AND INNOVATION MARK THIS YEAR'S STERLING SILVER GIFT OPPORTUNITIES



Tiffany's sterling silver flatware by Angela Cummings and other sterling silver gift ideas described in story.

"The bells of Christmas, jingle bells, Christmas treebells," are sounds of the holiday season that speak in a language made even more beautiful when the bells are made of sterling silver. This year, the "Fabergé of Bells," **Terry Mayer,** 165 East 35th Street, New York, N.Y. 10016 has created a collection of enchanting holiday hollybells, fruitbells, kittenbells and many other original bells styled for wearing around the neck, as well as ringing, that are available at fine stores throughout the U.S. Pictured is one of the famous "kittenbells" introduced to the market by Tiffany & Co. Or for a reproduction of a sterling silver beehive bell used to decorate Christmas trees in 19th-century Russia, or miniature silver bells used as 15th century decorations for Dutch Nativity scene cribs, these can be ordered from **The Metropolitan Museum of Art,** Box 255 Gracie Station, New York, N.Y. 10028.

From Italy's famous firm of **Gori & Zucchi,** Via Fiorentina 550, 52100 Arezzo, Italy come impressions of art, captured in sterling, such as Michelangelo's "Moses and the Ten Commandments" (shown at right), David and The Pieta. Gori & Zucchi's Incentor Division has also reproduced equally exciting pieces from other renowned sculptors, designers and inventors. These include reproductions of antique pistols, airplanes, ships, Knights in shining armor, weapons created by Leonardo da Vinci, and many other pieces, some with moveable parts and pieces. Additional information may be obtained from **Aurea Jewelry Creations,** 580 Fifth Avenue, New York, N.Y. 10036.

Or if you are interested in exquisite silver reproductions of jewelry of Alexander the Great's 4th-century B.C., or cuff links, pendants, rings, bracelets, etc., featuring an ancient star emblem disc (*as pictured*), antelope heads, Herakles knot on the head of Herakles, they are on display at **Elizabeth Arden's** 1147 Connecticut Ave., N.W. store, Washington, D.C. 20036 and at **ZOMARO Ltd.,** 610 Fifth Avenue, New York, N.Y. 10020.

For a full range of classic and unusually creative sterling silver products by noted designers, with something for every pocket, there is the 2nd floor of **Tiffany & Co.,** Fifth Ave. and 57th Street, New York, N.Y. 10022. A silver heart key ring for only $18; a sterling silver TRAC II shaver designed by Elsa Peretti, $210; to Tiffany's Queen Anne sterling silver service for over $10,000—all designed to help you pick an appropriate gift for your loved ones. The silver way of saying "Happy Holiday!"

WORLDWIDE SILVER INDUSTRIAL DEVELOPMENTS

The four 1981 quarterly issues of NEW SILVER TECHNOLOGY, just completed, have presented 280 summaries of industrially important silver advances developed in 28 countries from Australia to Zimbabwe. Examples of these in nine of the 20 categories are as follows.

- **BATTERIES & CELLS:** Institute of Power Sources in Tianjin, People's Republic of China, has developed a greatly improved button cell for hearing aids and pocket calculators made with silver tungstate and lithium.
- **BIO-MEDICAL:** Instytut Kolloidnya Khimya Vody of Kiev, USSR has found that maintaining a

silver concentration of 50 to 100 parts per billion in drinking water for two hours completely eliminates organisms which would cause dysentery and typhoid fever.

• **BRAZING & SOLDERING:** Johnson Matthey Metals Ltd., of Reading, England has solved the difficult problem of joining cast iron to steel by means of brazing alloys containing 49% silver.

• **CATALYSIS:** Institut für Technische Chemie at Garching, German Federal Republic has developed a new economical way to produce acetaldehyde for plastics manufacture directly from ethylene oxide by means of a silver catalyst.

• **CONDUCTORS:** Hong Kong Polytechnic, Kowloon, Hong Kong has developed new conductive plastics for making electronic parts, by incorporating silver powder and silver-coated glass spheres into polyester resins.

• **MIRRORING & PHOTO-ELECTRICS:** Center for Material Research at Stanford University in California has achieved a breakthrough for mass production of cells to convert sunlight directly into electricity, by producing the necessary pure silicon sheets by means of electrodeposition onto smooth silver electrodes.

• **PLATING:** Telephone relay switches which make perfect contact even when exposed to sulfide atmospheres are now possible by silver-palladium coatings, using a fused salt plating process developed by Degussa of Frankfurt, German Federal Republic.

• **STERLINGWARE & COLLECTIBLES:** Josten's, Inc. of Minneapolis, Minnesota has developed a brilliant new jewelry alloy containing 10% silver along with copper, gold and palladium, which is easily castable and resistant to tarnish and wear.

• **PRODUCTION:** Mining Research and Service Organization of Taipei, Taiwan efficientiy leaches silver and gold from ore ten times faster than with conventional cyanide, by using non-toxic thiourea, sulfuric acid and ferric ions.

The four 1981 New Silver Technology issues are available from The Silver Institute at US$30, and the coupon at the bottom of the opposite page may be used to order the four issues for 1982 at US$30.

A GIFT OF SILVER COINS--A WORLD TO CHOOSE FROM

What a magnificent gift it would be if we could give a friend a collection of each silver coin issued throughout the world during a single year. If the "single year" were to be 1980, we would give our friend at least 247 coins, minted by 85 countries.

For 1981, The Silver Institute doesn't yet have the data on the number of silver coins issued this year; however, even with available data it is easy to see that once again, a large number of nations issued silver coins. So far, a 1981 collection could include many interesting coins.

From Canada would come an interesting 500 fine silver dollar commemorating the Centenary of the planning of **Canada's Trans-Canada railway.** This coin shows an old steam locomotive against an outline map of Canada in the background. It measures 36 mm, weighs 23.3 grams and sells for only $14 in Uncirculated condition and $18 in Proof condition. Additional information about this coin may be obtained from the **Royal Canadian Mint,** 355 River Road Vanier, Ontario, Canada K1A 0G8.

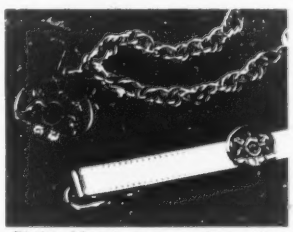
And no significant collection of 1981 silver coins could be formed without including at least one of the **Royal Wedding Silver Proof Crowns,** struck by the British Royal Mint in honor of Prince Charles and Lady Diana Spencer. The most recently issued crown was issued by the Commonwealth Nation of Guernsey, which is one of 15 nations that have joined Great Britain in celebrating the royal event. Crowns released to date have been struck in 925 fine silver, weigh 28.28 grams and measure 38.61 mm in diameter. Each coin is priced at $65. Worldwide mintage has been limited to 35,000 each for the Guernsey, Bermuda and Jersey Crowns and 250,000 for the Great Britain Crown. Orders for these coins may be sent to **British Royal Mint,** 128 Passaic Avenue, Fairfield, N.J. 07006.

A collection of silver coins of 1981 might also contain a Bishop's Taler from Andorra; an 850 fine silver 30 Yuan coin from the People's Republic of China, illustrating and commemorating the Chinese calendar's Year of the Rooster; and the world's first coin to depict a motocycle race, struck by the Isle of Man in 925 fine sterling silver to commemorate its Tourist Trophy motorcycle race.

FIVE MORE COMPANIES JOIN SILVER INSTITUTE

The Silver Institute warmly welcomes **The Veta Grande Companies, Inc.,** 19400 Business Center Drive, Northridge, California 91324 with its President, William P. Cordeiro, serving as Official Representative in the Institute; **Tanaka Kikinzoku Kogyo K.K.,** 14, Nihonbashi Kayabacho 2-chome, Chuo-ku, Tokyo, Japan, represented in Institute affairs by its President, Mr. Jun-ichiro Tanaka with its Managing Director, Takashi Tanaka as its Alternate Official Representative; **Gerald Metals, Inc.,** High Ridge Park, P.O. Box 10134, Stamford, Connecticut 06904, represented by its Vice President, Jean-Louis Danis; **PGP Industries, Inc.,** 13429 Alondra Boulevard, Santa Fe Springs, California 90670, represented by its Vice President/General Manager, Joseph J. Cassara; and **Gold Fields Mining Corporation,** 230 Park Ave., New York, N.Y. 10169 with President William K. Brown, Official Representative and Alternate Official Representative, William C. Bleimeister, Vice President-Operations at 200 Union Boulevard, Suite 500, Lakewood, Colorado 80228.

NEW INCENTIVES FOR SILVER INCENTIVE AWARDS



Philip Morris uses sterling silver gifts as part of its successful employee incentive program.

A handsome sterling silver tray . . . a useful sterling silver pen and pencil set . . . a solid cube of pure silver . . . a set of ornately decorated glasses made of the finest of Mexican silver . . . a designer pendant of sterling silver, set with a glowing ruby . . . and a sterling silver humidor are only a few of the types of silver incentive awards given to employees in recognition of their length of service, productivity, or safety achievement.

The Silver Institute has always pointed out the advantages of the use of silver incentive awards, but now, with the passage of the Economic Tax Recovery Act of 1981, Section 265, **the gift of silver incentive awards to employees in the U.S. has become even more attractive.** Previously, a company could not deduct more than $100 for a gift to an employee at retirement or as part of an incentive program. Now this amount has been increased to $400 and up to $1,600 per item if the average award under a qualified plan or program is below $400.

More recently, the **Jewelry Industry Council,** 608 Fifth Avenue, New York, N.Y. 10020, under the direction of its President, Mort Sarett, has begun a new and vigorous promotion of the use of silver products, as well as other types of jewelry store merchandise, in incentive programs.

SILVER REFINERS' MONTHLY PRODUCTION AND STOCKS HAVE DROPPED IN PAST YEAR AND A HALF

The totals on the following page show that U.S. and Non-U.S. refiners participating in The Silver Institute statistics produced 28.6 million troy ounces of refined silver in October 1981. This was only 74% of the 38.8 million troy ounces produced in the peak month of April 1980. The main cause of this was that production from old scrap was cut nearly in half, from 16.9 to 8.7 million troy ounces. During the same period the stocks in the hands of the participating refiners dropped to 7.6 million troy ounces at the end of October, which is 70% of the 11.0 million troy ounces of these stocks a year and a half earlier.

ORDER FORM for Silver Institute Publications:

Annual Subscription to NEW SILVER TECHNOLOGY for 1982 (US $30.00) ..... $ _____

INDEX for 1974–1976 (US $10.00) ..... $ _____

INDEXES for 1977, 1978, 1979, 1980 and 1981 (each US $5.00) ..... $ _____

Enclosed is a check for US $ _____ in payment for these Silver Institute Publications.

Please make check payable to The Silver Institute and send it together with this form to:

The Silver Institute, 1001 Connecticut Ave., N.W., Washington, D.C. 20036

NAME: _____ COMPANY: _____

(Please print)

ADDRESS: _____

LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver Bars** by All Known Refiners in the United States

	TROY OUNCES	MILLION TROY OUNCES				
	October 1981	Oct 1981	Sep 1981	Jan-Oct 1981	Jan-Oct 1980	Full Yr 1980
THESE REFINERS' PRODUCTION, BY SOURCE		*MONTHLY RATE*				
From Primary (ores & concentrates)	3,638,722	3.6	4.1	3.8	3.4	3.4
From Coins	16,517	0.0+	0.0+	0.2	1.7	1.4
From Old Scrap (used photo film & other products)	4,346,632	4.3	4.5	4.9	6.3	6.2
From New Scrap (in-plant clippings, waste)*	1,952,059	2.0	2.0	2.2	2.7	2.8
TOTAL PRODUCTION	9,953,930	10.0	10.5	11.1	14.1	13.9
TOTAL PRODUCTION Less New Scrap*	8,001,871	8.0	8.5	8.9	11.4	11.1
ABOVE TOTAL PRODUCTION, BY OWNERSHIP						
From Refiners' Own or Purchased Materials	7,826,691	7.8	7.6	8.2	9.2	9.2
Refined on Toll for Others	2,127,239	2.1	2.9	2.9	4.9	4.7
DISPOSITION BY THESE REFINERS						
Converted in Plant (consumed in fabricating, etc.)	3,016,403	3.0	2.9	3.3	4.8	4.9
Shipped Out: Own materials	5,703,512	5.7	5.3	5.1	4.6	4.5
Against Tolls	1,692,331	1.7	2.4	2.7	4.7	4.5
TOTAL DISPOSITION	10,412,246	10.4	10.6	11.0	14.2	13.9
TOTAL DISPOSITION Less New Scrap*	8,460,187	8.5	8.6	8.8	11.5	11.1
RESULTING CHANGE OF THESE REFINERS'		*TOTAL FOR PERIOD*				
STOCKS (Production Minus Disposition)	−458,316	−0.5	−0.0+	+1.0	−0.5	−0.5
THESE REFINERS' STOCKS AT END OF PERIOD	2,114,687	2.1	2.6	2.1	1.1	1.1

Production and Disposition of **999 Silver Bars** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa and Sweden; and some other Refiners in Europe and Asia.

	TROY OUNCES	MILLION TROY OUNCES				
	October 1981	Oct 1981	Sep 1981	Jan-Oct 1981	Jan-Oct 1980	Full Yr 1980
THESE REFINERS' PRODUCTION, BY SOURCE		*MONTHLY RATE*				
From Primary (ores & concentrates)	13,025,461	13.0	12.5	12.2	12.2	12.0
From Coins	403,899	0.4	0.1	0.1	0.1	0.1
From Old Scrap (used photo film & other products)	4,396,683	4.4	4.4	5.3	7.9	7.4
From New Scrap (in-plant clippings, waste)*	806,746	0.8	0.8	0.9	1.5	1.4
TOTAL PRODUCTION	18,632,789	18.6	17.8	18.5	21.6	21.0
TOTAL PRODUCTION Less New Scrap*	17,826,043	17.8	17.0	17.6	20.2	19.5
ABOVE TOTAL PRODUCTION, BY OWNERSHIP						
From Refiners' Own or Purchased Materials	15,757,049	15.8	15.4	15.6	17.7	17.2
Refined on Toll for Others	2,875,740	2.9	2.4	2.9	4.0	3.8
DISPOSITION BY THESE REFINERS						
Converted in Plant (consumed in fabricating, etc.)	4,221,626	4.2	4.1	4.8	7.5	7.0
Shipped Out: Own materials	11,474,389	11.5	12.1	11.1	10.3	10.4
Against Tolls	2,755,970	2.8	2.6	2.8	3.4	3.3
TOTAL DISPOSITION	18,451,985	18.5	18.7	18.7	21.3	20.8
TOTAL DISPOSITION Less New Scrap*	17,645,239	17.6	17.9	17.8	19.8	19.3
RESULTING CHANGE OF THESE REFINERS'		*TOTAL FOR PERIOD*				
STOCKS (Production Minus Disposition)	+180,804	+0.2	−1.0	−2.2	+3.7	+2.3
THESE REFINERS' STOCKS AT END OF PERIOD	5,467,937	5.5	5.3	5.5	9.0	7.6

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes; since it is in continuous cycle from new scrap to 999 silver, to new scrap, some like to see the production and disposition totals after deducting the new scrap from both.

THE SILVER INSTITUTE

A WORLDWIDE ASSOCIATION OF MINERS, REFINERS, FABRICATORS AND MANUFACTURERS

INCORPORATED 1971

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THE SILVER INSTITUTE LETTER

INFORMATION ON SILVER FOR INDUSTRY

VOLUME XI NUMBER 12 DECEMBER 1981

ELECTRIC CARS PERFORM WITH SILVER

The usefulness of the electric car is limited by the number of batteries that can be carried on board and the driving distance that can be achieved with them. Every element of electric car design must contribute toward maximizing battery life. Silver Institute member company, **Sherwood Overseas Co. Pty. Ltd.,** P.O. Box 6079 of Perth, Australia 6000, has met this challenge with an innovative power train which maximizes the life of the batteries by using them at the lowest possible power drain under all operating conditions. **At low operating speeds,** all eight 12-volt batteries are connected in parallel, delivering 12 volts uniformly from all eight batteries simultaneously. **When more power is required,** for example for acceleration, a demand signal is processed by the microprocessor on board. It signals the operation of **eight 300-ampere, 100-volt silver contactor switches** which shift the battery circuits from parallel to series, working up by sequential steps from 12 volt supply to the motor, to the full force of 96 volts with all the batteries in series for maximum power.

During sustained power drain in which some of the batteries are in series and some in parallel, the microprocessor rotates the circuits so as to relieve the high-power demand on any one battery, keeping its current use to the lowest possible drain so as to maximize the life of the charge.

The key to this operation is the heavy-duty silver contactor control which recircuits the batteries instantaneously, giving the car smooth increase in power as quickly as the accelerator is pressed. In the photograph, *above left,* Mr. Terry Jackson is holding one of the silver contact control assemblies. The automobile in which his power train is installed, *shown beside him,* was flown from Australia for exhibition at the 4th International Electric Vehicle Exposition at the Baltimore Convention Center.

MORE NEW USES OF SILVER IN PHOTOGRAPHY

The unrivaled quality of the silver image and the steady demand for a clear, stable record continues to place photography as the leading use of silver during the past year. The continued development of the photographic process and our progress in understanding its mechanism as reported in the 1981 quarterly issues of *New Silver Technology,* is evident in the summaries of 26 new significant papers and patents reported which include the following noteworthy examples:

- **Photographs taken under conditions where there is insufficient light to form images that can be reproduced by conventional means have long been a challenge to the photographer.** Poor lighting conditions are common for high-altitude photography, medical radiography, astronomical photography, and photographs taken indoors or late in the day. A new scheme for gold-plating individual silver grains by the use of a gold chloride toning solution, with a subsequent thermal neutron radiation flux exposure for 5 minutes, shows great promise. When the gold is exposed to this radiation, a radioisotope is produced that will, when a sheet of fresh photographic film is placed over it, make greatly enhanced images of the original. This innovation by C.D. Bond, **U.S. Department of the Navy,** ONR, Arlington, Va., provides a safe, convenient method of producing images with 3 to 5 times the contrast of the original photograph.

• **The creation of three-dimensional images on a single sheet of film is called holography.** Silver halide emulsions are by far the preferred recording material because of their high sensitivity and ready availability. The importance of three-dimensional photography, which is accurate to one wavelength of light, for industrial processes continues to grow. One problem has been that the development of the photographic film is slow in comparison to the pace at which industrial processes operate. For holography to be immediately useful for control of high speed production lines, high speed development of holographic images is a necessity. To meet this challenge, P. Harlharan, **National Measurement Laboratory, CSIRO, Sydney, Australia,** has developed a single-bath image development system for the silver halide films which provides a very satisfactory result: low fog levels and a dense image in only 2 to 4 minutes.

• The use of **silver halide photographic film for photomasks required to create the intricate circuits for microelectronic devices,** and as the primary recording medium for super-small microfilm storage continues to expand. Masamichi Sato, **Fuji Photo Film Co.,** Kanagawa, Japan, has achieved remarkable increases in the sharpness of these infinitesimal images by plasma etching. A plasma of hot oxygen with other gases is directed onto the film in vacuum under high frequency alternating current. This treatment removes all the non-image material, leaving a durable silver film with a high resolution and precise lines required for the complex circuitry of millions of new generation electronic devices.

SILVER PROOF COINS TO COMMEMORATE 1982 WORLD CHAMPIONSHIP OF SOCCER

One of the most exciting sports events in the world will take place on July 11, 1982, at the Santiago Bernabeu Stadium in Madrid, Spain—the 1982 World Cup Soccer competition. The 1982 World Cup Competition will be the biggest soccer tournament ever held, with a record number of 108 national teams entered. This is the first time 24 teams (16 previously) will qualify for the finals in which 52 games will be played in 17 stadia in 14 different locations in Spain. At this time, qualifying matches are being staged worldwide to narrow the field to the final 24 teams.

While athletes prepare for the 1982 World Cup of Soccer, Hungary, China, Ethiopia and Turkey are creating the first international coin collection ever minted to honor the World Cup. Under the sponsorship and with the endorsement of the Royal Spanish Soccer Federation, up to 20 silver proof coins will be issued to form the official collection. The coins will be of different sizes, precious metal content, and denomination; and will be minted by famed mints all over the world. Some countries will be issuing more than one silver coin, and this is the case with Hungary which is issuing the first two coins in the collection. The two 500 Forint coins from Hungary, each bearing a different soccer design, *as shown above right,* measure 40 mm in diameter and weigh 432 grains of 640 fine silver. Mintages will be strictly limited and no country may issue more than 100,000 silver proof coins.

Negotiations are still continuing with countries around the world. The invited nations include these and more: Argentina, Bolivia, Brazil, Bulgaria, Chile, Colombia, Costa Rica, Czechoslovakia, Jamaica, Panama, Peru, Poland, Portugal, Sudan, and Uruguay. All of the coins will be legal tender guaranteed by the governments of the issuing countries for their full face value. For those persons who would like to purchase the "official collection" of up to 20 different silver proof coins commemorating the 1982 World Championship of Soccer, information may be obtained from **Paramount Coin Corporation,** One Paramount Plaza, Englewood, Ohio 45322-2197.

SILVER'S FUTURE IMPORTANCE TO EASTMAN KODAK

During a presentation to the Twin Cities Society of Security Analysts on October 28, 1981, the President of Eastman Kodak Company, Colby H. Chandler, summed up the long-range importance of silver within the film industry when he said, "We continue to believe the overall impact of electronic display devices on the traditional print business is likely to be relatively small and the overall growth of the print market will more than compensate."

He explained, "We have been exploring the possibility of TV display of conventional still-film

images. I emphasize the word *possibility* because it remains to be seen whether or when our interest in such a display device might take commercial form. There is a good reason for this: People like color prints."

"In the early part of the 1970's, nearly one third of the amateur pictures made in this country were shot on slide films. Today, fewer than 15 percent of these pictures fall into that category. Over the past five years, growth in the number of slides, or transparencies, made by U.S. consumers has been about 20 percent. During the same interval, the number of exposures made on color negatives film has increased 4 times as fast, up 80 percent. Last year, in the United States alone, consumers took more than 10 billion pictures and, according to industry sources, 70 percent were made with color negative products. **It is here, in the creation of color prints, that the power of silver halide crystal comes most into play.** It is here that the formidable challenges facing electronic teams come sharply into focus."

"An all-electronic camera, with a million picture elements or fewer, could most likely yield an acceptable print for certain types of scenes—especially close-ups or scenes with minimum detail in the highlights or shadows. But," Mr. Chandler continued, "consumers expect—and deserve—picture-taking opportunities over a wide range of photographic space . . . and we continue to provide film and camera systems that meet their expectations and expand their opportunities at a reasonable cost. It is not an exaggeration to say that **if history were inverted and electronic cameras preceded the invention of silver halide photography, the world would acclaim this new silver technology.** One small piece of film would replace a sensor, signal processing electronics, and a magnetic recorder combined. And this piece of film, when held up to the light, would provide a remarkably accurate reproduction containing all the beauty and detail of the original scene."

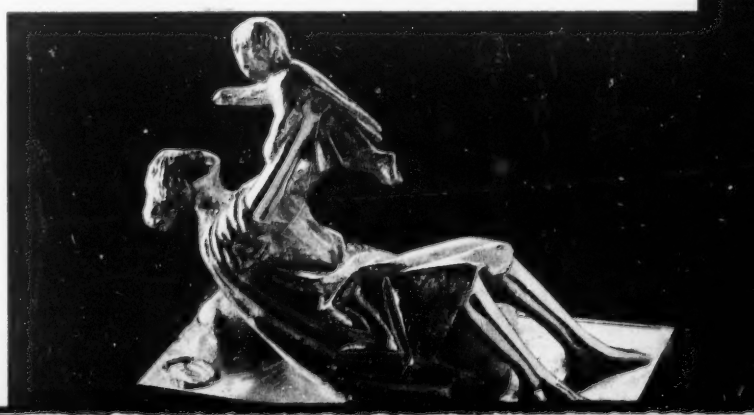
Using past print sales figures, Mr. Chandler noted, "By extrapolation, that historical rate would result in about 23 billion prints in 1990. But let's be very conservative and assume the rate is only half that of the last decade. That would, again by extrapolation, result in a 1990 amateur print volume of over 12 billion prints—well over the current 7 billion." Each print will be a vivid expression of silver halide's amazing properties—and this is one reason for silver's future importance, not only to Eastman Kodak, but the photographic industry of the entire world.

DANISH FIRM CREATES "ARS MUNDI ARGENTEA"

The Danish silversmith, Hans Hansen Sølvsmedie in Kolding, Denmark, has succeeded in something that has not been done since the days of Benvenuto Cellini and the Italian Renaissance. It has gathered together some of the world's greatest living sculptors, who have created a unique collection of new and original small sculptures in sterling silver.

Hans Hansen's name for the series: **ARS MUNDI ARGENTEA—art of the world in silver** is indicative of the international nature of sculpture, the beauty of silver and the nationalities of its sculptors. The first sculptors persuaded by the Danish firm to create works for the new series are, according to Hans Hansen, "Britain's most famous sculptors," Henry Moore, Kenneth Armitage and Lynn Chadwick. Then came the great Italian sculptor, Giacomo Manzu, who created *the pictured "La Pace"* which measures 218 mm in length and weighs over six and a half ounces. Other participating sculptors include Switzerland's Max Weiss and Danish artists, Bjørn Wiinblad and Allen Scharff.

Each of the silver sculptures is made in a very limited series, and each copy bears its own number, date, signature of the sculptor and the name of the silversmith. For example, there are only 199 copies of the *pictured "La Pace"*. With the success of ARS MUNDI ARGENTEA, Hans Hansen Sølvsmedie has added a new dimension to the ancient, tradition-laden trade of silvermaking. The firm has given great sculptors and artists an equally great new material to work with—sterling silver, and they have accepted the challenge. For additional information on this silver sculpture series, write to **Hans Hansen Sølvsmedie,** DK-6000 Kolding, Denmark.



LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver Bars** by All Known Refiners in the United States

	TROY OUNCES	MILLION TROY OUNCES				
	November 1981	Nov 1981	Oct 1981	Jan-Nov 1981	Jan-Nov 1980	Full Yr 1980
THESE REFINERS' PRODUCTION, BY SOURCE		*MONTHLY RATE*				
From Primary (ores & concentrates)	2,030,343	2.0	3.6	3.7	3.3	3.4
From Coins	13,545	0.0+	0.0+	0.1	1.5	1.4
From Old Scrap (used photo film & other products)	4,207,941	4.2	4.3	4.8	6.2	6.2
From New Scrap (in-plant clippings, waste)*	1,853,257	1.9	2.0	2.2	2.7	2.8
TOTAL PRODUCTION	8,105,086	8.1	10.0	10.8	13.8	13.9
TOTAL PRODUCTION Less New Scrap*	6,251,829	6.3	8.0	8.6	11.1	11.1
ABOVE TOTAL PRODUCTION, BY OWNERSHIP						
From Refiners' Own or Purchased Materials	6,088,938	6.1	7.8	8.0	9.0	9.2
Refined on Toll for Others	2,016,148	2.0	2.1	2.8	4.8	4.7
DISPOSITION BY THESE REFINERS						
Converted in Plant (consumed in fabricating, etc.)	3,253,085	3.3	3.0	3.3	4.8	4.9
Shipped Out: Own materials	2,938,662	2.9	5.7	4.9	4.5	4.5
Against Tolls	1,293,846	1.3	1.7	2.5	4.6	4.5
TOTAL DISPOSITION	7,485,593	7.5	10.4	10.7	13.8	13.9
TOTAL DISPOSITION Less New Scrap*	5,632,336	5.6	8.5	8.5	11.1	11.1
RESULTING CHANGE OF THESE REFINERS'		*TOTAL FOR PERIOD*				
STOCKS (Production Minus Disposition)	+619,493	+0.6	−0.5	+1.6	−0.3	−0.5
THESE REFINERS' STOCKS AT END OF PERIOD	2,734,180	2.7	2.1	2.7	1.2	1.1

Production and Disposition of **999 Silver Bars** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa and Sweden; and some other Refiners in Europe and Asia.

	TROY OUNCES	MILLION TROY OUNCES				
	November 1981	Nov 1981	Oct 1981	Jan-Nov 1981	Jan-Nov 1980	Full Yr 1980
THESE REFINERS' PRODUCTION, BY SOURCE		*MONTHLY RATE*				
From Primary (ores & concentrates)	12,381,052	12.4	13.0	12.2	12.1	12.0
From Coins	204,414	0.2	0.4	0.1	0.1	0.1
From Old Scrap (used photo film & other products)	4,983,648	5.0	4.4	5.3	7.5	7.4
From New Scrap (in-plant clippings, waste)*	868,411	0.9	0.8	0.9	1.4	1.4
TOTAL PRODUCTION	18,437,525	18.4	18.6	18.5	21.2	21.0
TOTAL PRODUCTION Less New Scrap*	17,569,114	17.6	17.8	17.6	19.7	19.5
ABOVE TOTAL PRODUCTION, BY OWNERSHIP						
From Refiners' Own or Purchased Materials	15,660,198	15.7	15.8	15.6	17.4	17.2
Refined on Toll for Others	2,777,327	2.8	2.9	2.9	3.8	3.8
DISPOSITION BY THESE REFINERS						
Converted in Plant (consumed in fabricating, etc.)	4,564,464	4.6	4.2	4.8	7.2	7.0
Shipped Out: Own materials	10,907,647	10.9	11.5	11.1	10.4	10.4
Against Tolls	2,654,144	2.7	2.8	2.8	3.3	3.3
TOTAL DISPOSITION	18,126,255	18.1	18.5	18.7	20.8	20.8
TOTAL DISPOSITION Less New Scrap*	17,257,844	17.3	17.6	17.7	19.4	19.3
RESULTING CHANGE OF THESE REFINERS'		*TOTAL FOR PERIOD*				
STOCKS (Production Minus Disposition)	+311,270	+0.3	+0.2	−1.9	+3.9	+2.3
THESE REFINERS' STOCKS AT END OF PERIOD	5,779,207	5.8	5.5	5.8	9.3	7.6

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes; since it is in continuous cycle from new scrap to 999 silver, to new scrap, some like to see the production and disposition totals after deducting the new scrap from both.

THE SILVER INSTITUTE

A WORLDWIDE ASSOCIATION OF MINERS, REFINERS, FABRICATORS AND MANUFACTURERS

INCORPORATED 1971

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THE SILVER INSTITUTE LETTER

INFORMATION ON SILVER FOR INDUSTRY

VOLUME XII NUMBER 1 JANUARY 1982

FIRST U.S. 90% SILVER COIN IN 18 YEARS WILL SALUTE THE BIRTHDAY OF GEORGE WASHINGTON

Washington's portrayal, struck in 1776, was on a medallion, shown above, rather than on a coin. The design for the new silver Washington half dollar coin is soon to be selected.

For those who admire the look and feel of the traditional U.S. 90 percent silver coin, the wait for such a coin has been 18 years. But for the numismatic world, and especially **for those coin collectors who have a special interest in U.S. commemorative coins, the wait for a new U.S. commemorative coin has been even longer!**

Thirty years passed between President Harry Truman's authorization of the Booker T. Washington-George Washington Carver commemorative silver half dollar in September, 1951, and President Ronald Reagan's signing of the George Washington Commemorative Coin Act into law on December 23, 1981.

Many numismatists applaud the use of a 90 percent silver coin to commemorate the 250th anniversary of the birth of the "Father of his Country" because in 1932, another 90% silver coin—a quarter—was issued to commemorate Washington's 200th birthday anniversary. John Flanagan's design of this coin proved to be so popular that the same design can be seen on today's regular issue quarter dollar.

In 1926, as part of the U.S. Sesquicentennial celebration, a half dollar coin bearing the likenesses of George Washington and President Calvin Coolidge, was minted. However, the new half dollar coin will mark the first time that a coin of this denomination has been dedicated exclusively to honoring George Washington. The new law specifies that "Both such designs [on each side of the coin] shall be emblematic of the two hundred and fiftieth anniversary of the birth of George Washington.

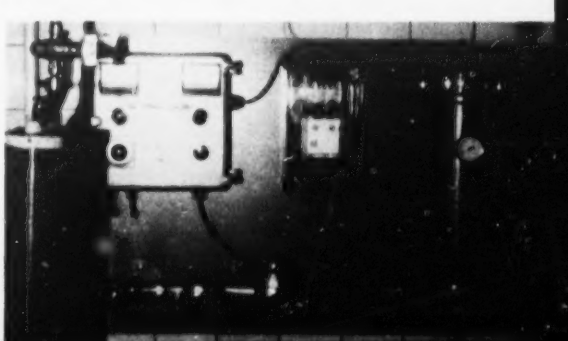
Up to 10,000,000 coins containing 3.6 million troy ounces of silver, may be minted. Each of these coins will have a diameter of 30.61 millimeters and will weigh 12.50 grams. All of these George Washington silver half dollars shall be legal tender and dated 1982. The price of these half dollars will be equal to the cost of production and distribution, plus a surcharge of not more than 20 percent of such cost.

The Silver Institute provides technical information in connection with the issuance of silver coinage. The United States is among the countries to which The Silver Institute has provided this technical data which is available to the governments of all nations.

KATADYN SILVER WATER PURIFICATION UNITS APPROVED BY FDA

Breweries and soft drink bottling companies must start their manufacturing processes with water that is entirely germ-free, tasteless, odorless, and sparkling clear. Since the turn of the century, various food and beverage industries have recognized that the best ways to attain all of these desirable characteristics include the addition of silver ions by various methods. During the past 40 years, the method of choice of hundreds of companies in 70 countries in Europe, Latin America, Africa, and Asia has become the Electro-Katadyn unit, (*pictured at right*), which is manufactured by **Katadyn Products Ltd.,** Industriestrasse 27, CH-8304 Wallisellen, Switzerland.

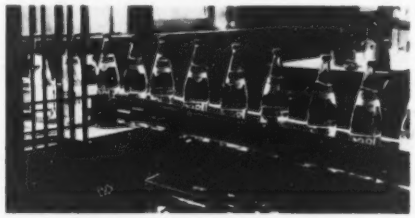
The Electro-Katadyn unit adds the desired precise amounts of silver ions into product water through electrolysis. The continuing germicidal effect of the silver ions serves to substantially increase the shelf life of soft drinks, lemonade, vinegar, beer, mineral water, and countless other bottled and canned products. The easy-to-handle unit also finds use in the final rinse water for disinfecting the surfaces of cans and bottles,



as well as in disinfecting the tubing and mechanical equipment at beverage plants.

The benefits of silver and the Katadyn unit have already been established by breweries and bottling companies, such as Bayerische Lowenbrauerei in Germany and Chaufontaine Monopole in Belgium, as well as by non-US establishments of leading international bottling enterprises such as Coca-Cola, Pepsi Cola, Seven-Up, and Canada Dry.

Now silver's capabilities have become available in the United States, with the Food & Drug Administration approval, in November 1981, of the Electro-Katadyn unit for the introduction of up to 50 parts per billion of free silver ions into product water in the beverage industry. "With this latest FDA approval, U.S. bottlers can now take advantage of the process long favored by their European colleagues. This procedure can result in the elimination of chlorine currently used for the same purposes," notes Mr. Sy Rotter, the U.S. Representative for Katadyn, Switzerland.



But Katadyn's availability in the United States does not stop with the Electro-Katadyn unit. Last November also witnessed registration by the U.S. Environmental Protection Agency (EPA) of the **Katadyn Pocket Filter,** which will be welcome news to campers, hunters, geological personnel and others who find themselves far from potable water and must disinfect water available in their surroundings. In the filter, metallic silver is dispersed throughout the filter ceramic to prevent bacterial infection of the filter itself. Katadyn Pocket Filter units are purifying water every day in Europe, Latin America, Asia, and Africa; while in the United States the units have already been purchased by the U.S. National Park Service and the U.S. Foreign Aid program for emergency potable water.

"Silver is the active ingredient in both processes. Once again silver's valuable contribution to water purification and to a healthier environment is demonstrated," Mr. Rotter points out. Inquiries into the availability of both of these Katadyn products can be directed to Mr. Sy Rotter, President, **Katadyn USA Inc.,** 4515 Willard Avenue, Chevy Chase, Maryland 20815.

SILVER BRINGS COMFORT AND HEALING TO BURN VICTIMS

The overriding cause for concern of physicians attending to burn victims is the susceptibility of the burn wounds to deadly bacterial infection. **Recent scientific advances continue to confirm the pre-eminence of silver compounds for burn therapy,** as reported in recent issues of New Silver Technology.

For years, the most effective preventive treatment against such infection has been the daily application of silver sulfadiazine cream directly on the burn area. Now the miracle of silver sulfadiazine is being made to serve even more conveniently and effectively through the work of Dr. E.C. Robb, Dr. D.G. Fitz, and Dr. P. Nathan of **The Shriners Burns Institute,** 202 Goodman Street, Cincinnati, Ohio 45219. Here, clinical studies are currently being performed employing sheets of a polymeric synthetic burn dressing preloaded with silver sulfadiazine, allowing for a continuous and gradual delivery of the silver compound to the wounds of second and third degree burn patients, where it can work its disinfecting and healing powers. According to Dr. Nathan, the new dressing will serve as a "continuous drug-delivery system" that will eliminate the need for the frequent painful changes of the burn victim's dressing. Dr. Nathan adds that the silver-containing polymeric dressing ensures sufficient bacterial protection for four to seven days, thereby "reducing the nursing care, and discomfort and pain to the patient, and also reducing the threat of entry of new bacteria to the wound," which accompany frequent changes in dressing.

Further advances in silver compositions for treating burns have been made in Italy. Dr. A. Ferrara and Dr. A. Navone at the Cattedra di Chemioterapia, Istituto Forlanini, Università degli Studi, Pavia, Italy, have found that a new compound, silver mafenide, is effective against 41 types of bacteria, and has the advantage of penetration through the dry, crusty eschar tissue that may form on the surface of burned areas,**bringing its antibacterial and healing properties deeply into the burn wound.** Silver compositions are bringing increasing blessings to burn victims throughout the world.

SILVER PLAYED MANY ROLES IN WORLD WAR II

"During the war, the U.S. Treasury's silver holdings proved of great value. Large amounts were lend-leased to Allied governments that found they could better maintain the confidence of

populations under war-time conditions by circulating coins of intrinsic value, containing silver. Substantial quantities of silver were used in place of copper as busbars in government-owned defense plants," said Simon D. Strauss of ASARCO Inc. in his 1981 Henry Krumb Lecture of the American Institute of Mining, Metallurgical and Petroleum Engineers.

Large quantities of silver were also used in the making of brazing alloys for joining metal parts in hundreds of major items of war equipment, including vehicles, mortar shells, incendiary bombs and hand grenades. Millions of ounces of silver were used for photographic products and processes, electrical parts, batteries, airplane engine bearings, and military insignia. Much silver was also employed in making such things as silver-plated eating utensils for the military forces, medicines, dental materials, and equipment for emergency desalination of sea water.

"One of the unusual ways in which the U.S. government made use of its holdings of silver during World War II," according to Mr. Strauss, "was by **using 49 million troy ounces of silver in the minting of 870 million "silver nickels" in the 1942–1945 period.** This five-cent piece contained 35% silver, plus manganese and copper. It was issued because of war-time stringencies in the supplies of nickel and copper. It is estimated that 3,000 tons of nickel and 9,000 tons of copper was conserved for the war effort through this substitution."

These "silver nickels" are now prized by collectors. One large holder, **Barlow International,** 6210 Massachusetts Avenue, N.W., Washington, D.C. 20016 advises that it has some available in packages of twenty, at 10% over the current value of their silver content. Twenty of the "silver nickels" contain 35 grams, or 1.125 troy ounces of silver.

NEW EUROPEAN MEMBER

Cordially welcomed as a member of The Silver Institute is Norddeutsche Affinerie, Alsterstrasse 2, 2000 Hamburg 36, West Germany, represented by Walter A. Gleich, President.

NEW SILVER TECHNOLOGY–1982

The first January quarterly issue of NEW SILVER TECHNOLOGY–1982 has just been published. The four 1982 issues, presenting Summaries of important worldwide silver developments in 20 industrial categories of use, can be obtained by sending check for US$30 to **The Silver Institute,** 1001 Connecticut Avenue, N.W., Washington, D.C. 20036. Some examples of the 70 Summaries in the January issue are:

- **U.S. Steel,** Pittsburgh, Pennsylvania has produced steel with extraordinary corrosion resistance for deep well petroleum drilling by including 88 troy ounces of silver per ton of steel alloy.
- **Tanaka, K.K.** of Tokyo has developed two new silver-containing alloys for making flutes and other musical instruments of greatly improved tone and durability.
- **W.C. Heraeus, GmbH of Hanau,** West Germany has developed improved electrical contact alloys made with silver.
- **Hokkaido University,** Sapporo, Japan has found that valuable hydrogen gas as a clean fuel can be produced by bubbling abundant, unwanted hydrogen sulfide through molten silver-bismuth alloy.

LESS REFINED SILVER PRODUCTION

While these and other technical developments are opening additional beneficial usuage for silver, there has been a decrease in the production of refined silver for all uses.

Monthly totals of production and disposition of 999 silver are reported on the fourth page of each issue of The Silver Institute Letter including this one.

For U.S. refiners and for Non-U.S. refiners participating in the Silver Institute statistical series, the table at the right provides summaries of monthly and annual production, with percentage of change, for 1981 as compared with 1980.

REFINED SILVER PRODUCTION in Millions of Troy Ounces

	All U.S. Refiners			Non-U.S. Participating Refiners		
	1980	1981	% Change	1980	1981	% Change
Jan	18.1	12.9	−29%	22.8	19.4	−15%
Feb	17.5	12.0	−31%	23.1	18.8	−19%
Mar	17.7	11.4	−36%	25.4	21.0	−17%
Apr	16.9	11.9	−30%	21.9	21.3	− 3%
May	16.5	10.4	−37%	22.3	16.5	−26%
Jun	14.8	11.5	−22%	18.9	18.0	− 5%
Jul	6.7	10.4	+55%	18.8	16.3	−13%
Aug	11.6	10.1	−13%	18.7	17.6	− 6%
Sep	10.8	10.5	− 3%	20.8	17.8	−14%
Oct	10.6	10.0	− 6%	23.7	18.6	−22%
Nov	10.6	8.1	−24%	16.8	18.4	+10%
Dec	14.6	11.6	−21%	18.6	18.6	0%
Full Year	166.3	130.8	−21%	251.7	222.3	−12%

LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver Bars** by All Known Refiners in the United States

	TROY OUNCES	MILLION TROY OUNCES		
	December 1981	Full Year 1981	1981	1980
THESE REFINERS' PRODUCTION, BY SOURCE			*MONTHLY RATE*	
From Primary (ores & concentrates)	3,966,098	44,326,848	3.7	3.4
From Coins	4,842	1,541,735	0.1	1.4
From Old Scrap (used photo film & other products)	3,854,879	56,815,703	4.7	6.2
From New Scrap (in-plant clippings, waste)*	3,763,342	28,098,517	2.3	2.8
TOTAL PRODUCTION	11,589,161	130,782,803	10.9	13.9
TOTAL PRODUCTION Less New Scrap*	7,825,819	102,684,286	8.6	11.1
ABOVE TOTAL PRODUCTION, BY OWNERSHIP				
From Refiners' Own or Purchased Materials	9,719,752	97,581,340	8.1	9.2
Refined on Toll for Others	1,869,409	33,201,463	2.8	4.7
DISPOSITION BY THESE REFINERS				
Converted in Plant (consumed in fabricating, etc.)	4,903,445	40,815,699	3.4	4.9
Shipped Out: Own materials	6,936,732	60,626,947	5.1	4.5
Against Tolls	1,385,922	29,353,121	2.4	4.5
TOTAL DISPOSITION	13,226,099	130,795,767	10.9	13.9
TOTAL DISPOSITION Less New Scrap*	9,462,757	102,697,250	8.6	11.1
RESULTING CHANGE OF THESE REFINERS'			*TOTAL FOR PERIOD*	
STOCKS (Production Minus Disposition)	−1,636,938	−12,964	−0.0+	−0.5
THESE REFINERS' STOCKS AT END OF PERIOD	1,097,242	1,097,242	1.1	1.1

Production and Disposition of **999 Silver Bars** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa and Sweden; and some other Refiners in Europe and Asia.

	TROY OUNCES	MILLION TROY OUNCES		
	December 1981	Full Year 1981	1981	1980
THESE REFINERS' PRODUCTION, BY SOURCE			*MONTHLY RATE*	
From Primary (ores & concentrates)	13,292,497	147,386,310	12.3	12.0
From Coins	0	1,155,801	0.1	0.1
From Old Scrap (used photo film & other products)	4,568,355	62,658,579	5.2	7.4
From New Scrap (in-plant clippings, waste)*	734,715	11,101,364	0.9	1.4
TOTAL PRODUCTION	18,595,567	222,302,054	18.5	21.0
TOTAL PRODUCTION Less New Scrap*	17,860,852	211,200,690	17.6	19.5
ABOVE TOTAL PRODUCTION, BY OWNERSHIP				
From Refiners' Own or Purchased Materials	15,877,714	188,021,157	15.7	17.2
Refined on Toll for Others	2,717,853	34,280,897	2.9	3.8
DISPOSITION BY THESE REFINERS				
Converted in Plant (consumed in fabricating, etc.)	4,521,348	57,445,602	4.8	7.0
Shipped Out: Own materials	11,727,483	133,463,810	11.1	10.4
Against Tolls	2,722,931	33,621,651	2.8	3.3
TOTAL DISPOSITION	18,971,762	224,531,063	18.7	20.8
TOTAL DISPOSITION Less New Scrap*	18,237,047	213,429,699	17.8	19.3
RESULTING CHANGE OF THESE REFINERS'			*TOTAL FOR PERIOD*	
STOCKS (Production Minus Disposition)	−376,195	−2,229,009	−2.2	+2.3
THESE REFINERS' STOCKS AT END OF PERIOD	5,403,012	5,403,012	5.4	7.6

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes; since it is in continuous cycle from new scrap to 999 silver, to new scrap, some like to see the production and disposition totals after deducting the new scrap from both.

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THE SILVER INSTITUTE LETTER

INFORMATION ON SILVER FOR INDUSTRY

VOLUME XII NUMBER 2 FEBRUARY 1982

KODAK LAUNCHES NEW DECISION-FREE DISC CAMERAS—WITH SILVER'S HELP

Through news conferences held around the world, **Eastman Kodak Company recently introduced a new line of compact cameras built around a unique rotating disc of silver halide film that, according to Kodak chairman Walter A. Fallon, combine to produce a new system for decision-free photography. "They will enable users to take good pictures virtually anywhere,"** he said.

The choice of subject is still yours, of course, but once you have dropped the flat silver halide film disc into the camera and closed the back, all you have to do is choose your scene in the viewfinder and press the button. Then, the new Kodak disc camera, by means of two integrated electronic circuits, will *analyze* the scene . . . *set* the proper exposure . . . *activate* the built-in flash if the camera decides that it is needed . . . *take* the picture . . . *advance* the film to the next frame . . . and *recharge* the flash, all in a split second's time.

New silver halide film disc with revolutionary new electronic flash and automatic camera.

Mr. Fallon said, **"The yield of good to excellent pictures routinely produced by consumers is expected to increase by 25 percent,"** and added, "Kodak disc cameras and the new silver halide Kodacolor HR disc film should reduce the chance of underexposure by half, camera shake that results in blurry pictures to less than two percent, and the number of blank frames and flash failures to less than a fraction of one percent." This new "pocket-size" camera's Ultralife energy source will power the camera and electronic flash for the life of the camera in normal use.

Kodak also disclosed that the 15-picture silver halide film disc will list for $3.19, and that the three new disc cameras will range in list price from $67.95 to $142.95. They have the same **basic features:** a six-volt lithium power source, four-element, 12.5 mm, f/2.8 glass lens, an automatic built-in electronic flash with a flash range from 4 to 18 feet, automatic film advance, 1⅓-second flash recycling time, and auto exposure control which selects the correct shutter speed and aperture. The fixed focus lens provides sharp pictures from 4 feet to infinity. The least expensive **Kodak disc 4000 camera** has all basic features. The **6000 camera** can focus on subjects as close as 18 inches, and the **Kodak disc 8000 camera** includes the 6000 camera's features plus a self-timer, a rapid-sequence film advance, a digital alarm clock and a gold-anodized appearance. Already in production, these cameras should reach retailers in the United States, Canada, Puerto Rico, Panama and Japan by May 17.

SILVER INDUSTRY MEETING

Left to right: Hans-Bernd Ferner, Norddeutsche Affinerie, Germany; Institute Vice President, Enrique Ibarra, Real del Monte y Pachuca, México; and Seiichi Ohtsuki, Mitsubishi Metal, Japan.

Officials of silver mining, refining, manufacturing, and bullion companies in Europe, Asia, and North and South America met for a Silver Institute Board of Directors meeting at the International Club in Washington, D.C. on February 1. The Board elected William A. Griffith, President of **Hecla Mining Company** of Wallace, Idaho, as Vice President for the Western United States and elected Keith C. Hendrick, President of **Noranda Sales Corporation Ltd.** of Toronto, as a member of the Executive Committee from Canada.

Institute Chairman Bernhard Rohe of **Industrias Peñoles, S.A.,** and Institute President Alex Schmidt-Fellner of **AMAX Inc.**

Institute Chairman, Bernhard Rohe of Industrias Peñoles; James C. Buck of ASARCO; Institute Treasurer, William P. Lohden of Callahan Mining; Institute President, Alex Schmidt-Fellner of AMAX; and Institute Executive Director, Richard L. Davies.

led the meeting. The Executive Director, Richard L. Davies, reported on the work which The Silver Institute has been doing in advancing the interests of silver by extending its beneficial uses, and by providing precise and timely statistics. He noted the present difficulties in the various sectors of the silver industry, as in other parts of the economy; but reported that in the United States, although refined silver production decreased to 130.7 million troy ounces in 1981 from 166.4 million troy ounces in 1980, the amount of refined silver used increased to 140.1 million troy ounces in 1981, as compared with 132.5 million troy ounces in 1980. The Board authorized a program by which the Institute will continue its helpful work in the interest of silver and the use of silver products in 1982.

L. to r.: Pablo A. Padilla, Centromin, Perú; Diana Manson of Equity Silver Mines, Canada; Bob Ross, Engelhard Industries; Institute Vice Presidents, Francis H. Curren of Pease & Curren and William A. Griffith of Hecla Mining; and Kent D. Hoffman of Kidd Creek Mines, Canada.

FILM "SILVER" ENJOYED BY HUNDREDS OF THOUSANDS

The U.S. Bureau of Mines reported that the new, 28-minute, sound-and-color film SILVER, produced by The Silver Institute which gave 300 copies to the Bureau, was shown 13,606 times to a total of 429,667 persons during 1981. The growing interest in SILVER made it the fourth most popular film in the Bureau's industry-sponsored program during the last quarter of 1981.

Schools, civic and business groups, scientific and professional societies, and other responsible organizations may obtain prints of SILVER on a free-loan basis by requesting them from: **Motion Pictures, Bureau of Mines, U.S. Department of Interior, 4800 Forbes Avenue, Pittsburgh, PA 15213. Telephone: (412) 621-4500.**

SILVER BARS PAY RANCHERS' DIVIDEND

On February 16, the **Ranchers Exploration and Development Corporation,** 1776 Montano Road, N.W., Albuquerque, New Mexico 87197, used silver produced by the company's Escalante Silver Mine in southwest Utah to pay its dividend for the quarter ending December 31, 1981. The record date for determining those shareholders entitled to receive the silver dividend is December 30, 1981. The dividend rate is .00833 troy ounces per share of Common Stock, which equates to five troy ounces per 600 shares held. Ranchers said that a shareholder is required to own a minimum of 600 shares in order to receive the dividend in silver. Shareholders who did not hold enough shares to receive the silver dividend received cash equivalent of $.076 per share.

Ranchers said that arrangements had been made with the refining firm of **Johnson Matthey Limited, Toronto, Canada,** for production of one ounce, five ounce and ten ounce bars which were used to pay most of the dividend. Each bar is certified by Johnston Matthey as to weight and purity (at least 999 fine silver) and the Ranchers logo was stamped on one side of each bar. Certain very large shareholdings received 50 or 100 ounce cast bars.

Ranchers had previously paid two quarterly dividends in gold from production at its Alaskan gold properties. The Company said that shareholder response to these dividends has been very favorable, and that it intended to continue the practice of paying dividends with its precious metals production. The Escalante Mine reached full production in November, 1981 and the first silver dividend marked Ranchers' emergence as a major producer of silver.

SILVER PROVIDES RELIABLE AND SAFE CIRCUITS

Every household and every industry served by electricity relies upon the safe operation of electrical appliances and equipment. The most important element of that safety lies in the operation of the switching devices that control the flow of the electrical current. Absolute reliability is required for ovens, water heaters, dishwashers, vacuum cleaners, fluorescent lights, and all circuit breakers, regardless of how high the current surges may be. The circuit design engineer must consider such factors as mechanical wear, contact heating due to low conductive materials, arc erosion, and welding due to arcing.

This is made clear in a new publication on *Electrical Contacts,* issued by **DEGUSSA Geschäftsbereich,** Technische Metallerzeugnisse, Elektrotechnik, Leipziger Strasse 10, D-6450 Hanau 1, West Germany, summarized in the January 1982 issue, **New Silver Technology. The primary reliable metal for these applications is silver.** Alloying metals are included for such mechanical considerations as wear, and for such electrical considerations as amperage. The alloying elements described in terms of their enhancement of the performance of silver under varying conditions, include cadmium oxide, carbon, copper, nickel, and zinc oxide, up to about 200 amperes. Above this value, into the range of 25,000 amperes, silver alloys of tungsten, tungsten carbide, and molybdenum are used.

While all of these various metals enhance the mechanical properties of electrical contacts to meet specific conditions of operations or use, it is the fact that silver has the highest conductivity of any material, that assures long-term high performance of the devices to safely control electrical appliances and equipment.

BEAUTIFUL SILVER COINS MINTED BY AT LEAST 77 NATIONS IN 1981

Over 180 different silver coinage issues were minted by at least 77 nations during 1981, according to a *preliminary* report by The Silver Institute; including 14 countries which did not issue silver coins in the previous year. Among these 14 nations are: Andorra, Ascension Islands, Bermuda, Finland, Greece and India.

Although no final mintage figures have been sent to The Silver Institute by any country, a partial report from the **Royal Canadian Mint,** covering the period of January 1 through October 31, 1981, indicates that Canada's annual $1 silver commemorative coin is enjoying increased popularity. This is evidenced by the fact that during the first ten months of 1981, the Mint issued 654,785 of the 1981 silver dollars commemorating the Centenary of the Trans-Canada railway, as compared with 539,617 silver commemorative dollars issued in 1980.

Popular coinage themes included the **Royal Wedding of Prince Charles and Lady Diana** and lovely proof silver coins celebrating the **UNICEF International Year of the Child,** such as the 5 Pound Proof 925 Fine Silver coin (*shown at right*) which portrays children playing hopscotch on the reverse. The obverse features the official emblem of Malta, instituted in 1975, which depicts a boat in the sun.

PROOF COINING OF SILVER IS PAINSTAKING PROCESS

Much care is taken during the various phases of proof coin production, so that the final product will have an unmarred beauty, according to a report by Joseph Kozol, **The Franklin Mint, Inc.,** Franklin Center, Pennsylvania 19063 published in **The Proceedings of the Fourth International Precious Metals Institute Conference** and summarized in the January 1982 issue of the quarterly **New Silver Technology** of The Silver Institute.

Proof coins are typically minted from either fine (999) silver bullion, or from sterling silver. Through a continuous casting process, silver bars are made, then scalped with a horizontal milling machine that removes the outermost layers, leaving the bars clean and free of abrasive particles. Then silver rolls are prepared and planchets, blanks with raised edges, are punched out and given a high luster. And after a final aqueous cleaning, the blanks are coined in a dust-free and lint-free environment, producing coins with a beautiful mirror-like finish.

PRODUCTION OF 999 SILVER CONTINUES TO DECREASE

Every month, 57 refiners in various parts of the world send individual confidential reports of their operations so that The Silver Institute may report them in the form of U.S. Totals and Non-U.S. Totals. These are presented below in simplified, readable form.

It will be noted that, while the production of refined silver from ores and concentrates has been increasing slightly from 1980 through January 1982, during the same period the refined production from coins, old scrap and new scrap has steadily decreased. Thus the monthly average of total production by U.S. and Non-U.S. participating refiners, in millions of troy ounces of refined silver, dropped from 35.9 in 1980 to 30.5 in 1981, and to 27.6 million troy ounces of refined silver available for all uses, in January 1982.

LATEST SILVER INSTITUTE REFINING STATISTICS

Production and Disposition of **999 Silver** by All Known Refiners in the United States

	TROY OUNCES	MILLION TROY OUNCES				
	January 1982	Jan 1982	Dec 1981	Jan 1981	Full Yr 1981	Full Yr 1980
THESE REFINERS' PRODUCTION, BY SOURCE		*MONTHLY RATE*				
From Primary (ores & concentrates)	3,913,613	3.9	4.0	3.6	3.7	3.4
From Coins	0	0.0	0.0+	0.3	0.1	1.4
From Old Scrap (used photo film & other products)	3,745,621	3.7	3.9	6.1	4.7	6.2
From New Scrap (in-plant clippings, waste)*	1,383,545	1.4	3.8	2.8	2.3	2.8
TOTAL PRODUCTION	9,042,779	9.0	11.6	12.9	10.9	13.9
DISPOSITION BY THESE REFINERS						
Converted in Plant (consumed in fabricating, etc.)	2,390,100	2.4	4.9	4.5	3.4	4.9
Shipped Out as 999 Silver	6,071,863	6.1	8.3	7.8	7.5	9.0
TOTAL DISPOSITION	8,461,963	8.5	13.2	12.3	10.9	13.9
RESULTING CHANGE OF THESE REFINERS'		*TOTAL FOR PERIOD*				
STOCKS (Production Minus Disposition)	+580,816	+0.6	−1.6	+0.5	−0.0+	−0.5
THESE REFINERS' STOCKS AT END OF PERIOD	1,678,058	1.7	1.1	1.6	1.1	1.1

Production and Disposition of **999 Silver** by All Known Refiners in Australia, Canada, Mexico, Peru, South Africa, Sweden, and West Germany; and some other Refiners in Europe and Asia.

	TROY OUNCES	MILLION TROY OUNCES				
	January 1982	Jan 1982	Dec #1981	Jan #1981	Full Yr #1981	Full Yr #1980
THESE REFINERS' PRODUCTION, BY SOURCE		*MONTHLY RATE*				
From Primary (ores & concentrates)	12,814,525	12.8	13.7	12.1	12.7	12.4
From Coins	0	0.0	0.0	0.3	0.1	0.1
From Old Scrap (used photo film & other products)	4,152,771	4.2	5.1	6.6	5.7	7.9
From New Scrap (in-plant clippings, waste)*	1,651,473	1.7	0.9	1.5	1.1	1.6
TOTAL PRODUCTION	18,618,769	18.6	19.7	20.5	19.6	22.0
DISPOSITION BY THESE REFINERS						
Converted in Plant (consumed in fabricating, etc.)	3,336,879	3.3	4.5	5.9	4.8	7.0
Shipped Out as 999 Silver	14,744,330	14.7	15.5	14.6	15.0	14.8
TOTAL DISPOSITION	18,081,209	18.1	20.0	20.6	19.8	21.9
RESULTING CHANGE OF THESE REFINERS'		*TOTAL FOR PERIOD*				
STOCKS (Production Minus Disposition)	+537,560	+0.5	−0.4	−0.1	−2.2	+2.3
THESE REFINERS' STOCKS AT END OF PERIOD	5,940,572	5.9	5.4	7.6	5.4	7.6

* PRODUCTION From New Scrap is 999 silver made from in-plant clippings, spillage, sweepings, etc., generated during manufacturing processes.

#Revised to include additional participants

THE SILVER INSTITUTE

A WORLDWIDE ASSOCIATION OF MINERS, REFINERS, FABRICATORS AND MANUFACTURERS

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